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Oviposition behavior

Shuke Xiao

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An abbreviated version of this protocol was published in eLIFE in Oct 2019

Robust olfactory responses in the absence of odorant binding proteins

DOI: 10.7554/eLife.51040

Detailed protocol

Please see below, a more detailed description is provided as italic in addition to the methods described in Materials and Methods section.

Oviposition assays were carried out in Petri dishes containing four quadrants (Dot Scientific, CAT # 557684). *This kind of dish was originally used for larval assay, flies can easily explore all quadrants.* Two quadrants contained 0.25% (w/v) agarose with 1% (w/v) sucrose, which was added to elicit oviposition. *A slight higher concenrtaion was prepared as later linoleic acid - ethanol will be added.* One of the two quadrants contained a sample of linoleic acid, while the other was a control. *Two quadrants were left blank to load flies.* To better solubilize the linoleic acid sample, it was first pre-mixed in a 0.2% (v/v) solution of ethanol, which was then added to agarose that was at 55–58°C. After vigorous shaking, 5 ml of this agarose was introduced into a quadrant. The other quadrant contained agarose prepared in exactly the same way, but with 0.2% ethanol that contained no linoleic acid sample. *An advice here is, always switch the order of introducing two quandrants.*

10 newly eclosed females were cultured with three males in a vial for 5–6 days. *Flies were collected on daily basis.* Shortly before the assay, flies were immobilized on ice, and female flies were gently placed into the two quadrants that contained no agarose. *Male flies were discarded.* Ten females were maintained in the Petri dish for 20–24 hr in a dark room (25°C, 60% humidity). An oviposition preference index (OPI) was then calculated as follows: OPI = (number of eggs on stimulus quadrant – number of eggs on control quadrant)/ (total number of eggs). A very small fraction of dishes contained fewer than 10 eggs and were excluded from the assay. Mutant and control flies were tested in parallel in all cases.

How to cite: (Readers should cite both the Bio-protocol preprint and the original research article where this protocol was used)

1. Xiao, S. (2020). Oviposition behavior. Bio-protocol Preprint. bio-protocol.org/prep182.
2. Xiao, S., Sun, J. S. and Carlson, J. R.(2019). Robust olfactory responses in the absence of odorant binding proteins. eLIFE. DOI: 10.7554/eLife.51040